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ZOOLOGY.

Carboniferous Reptiles of Ohio.—Prof. Cope made some observations before the Philosophical Society at Philadelphia on the extinct Batrachian Fauna of the Carboniferous of Linton, Ohio, based on studies of materials obtained by Prof. S. J. Newberry, director of the Geological Survey of Ohio. Twenty-seven species had been discovered up to the present time, twenty-three of which were referred to the following genera. Pelion Wyman, 1; Sauropleura Cope, 3; Tuditanus Cope, 4; Brachydectes Cope, 1; Oestocephalus Cope, 6; Cocytinus Cope; Molgophis Cope, 1; Phlegethontia Cope, 2; Colosteus Cope, 3; Eurythorax Cope, 1.

Tuditanus, Cocytinus and Phlegethontia were described as new genera. The first represented Dendrerpeton Owen, but possessed thoracic shields. Plegethontia embraced slender snake-like forms without armature, ribs or limbs, and was allied to Molgophis. Cocytinus was defined as a branchiferous animal somewhat resembling Necturus, but without fore limbs and well ossified vertebræ.

Oestocephalus was defined as having the three pectoral shields, weak posterior limbs only present, head lanceolate; ventral armature consisting of closely packed osseous rods arranged *en chevron;* spines of the vertebræ fan-shaped. Three new species were described, one of which was the smallest of fossil Batrachia, being scarcely four inches long and represented by beautiful specimens. Two new species of Sauropleura, three of Tuditanus, one of Cocytinus, two of Phlegethontia and one of Colosteus (*C. pauciradiatus*) were added to the system. *Eurythorax sublævis* Cope was a large form of four feet in length with the pectoral shield very broad and nearly smooth.

Pelion and Tuditanus were pointed out as the broad-headed types. It was stated in conclusion that no reptiles proper had been yet discovered in the coal measures and that Sauropleura looked much like a Lacertilian with its long limbs, neck, etc., yet it had the armature of the belly and other structures of the Batrachia. This class has then forms resembling the serpents (Molgophis), lizards (Sauropleura) and crocodiles (Labyrinthodon) among true reptiles.

Note on the Prairie Dog.—The graphic account of the habits of *Cynomys ludovicianus* given by Prof. Jillson in the Naturalist for March, 1871, refers to the small amount of water used by it.

Our experience with a pair which were domesticated in my laboratory for a month, agrees with his, so far as regards the water; when offered it was either refused or merely tasted. Of milk, however, they were very fond, and drank from the same dish with a cat, lapping it up greedily and seldom stopping while any milk remained; in less than fifteen minutes, however, a looseness of the bowels always appeared, which continued for a day or two. In uttering their peculiar cry, they seemed to stiffen the whole trunk and "rear" into a very comical attitude. Curiously enough, they not only burrowed, but were vigorous climbers, would run up my legs and get upon my shoulders and even head; but they seemed to have little power of estimating height, for they continually tumbled from the chairs and tables, often striking upon the tip of the nose, whereupon they made comical passes in front of the nose with the front-paws; one of them finally was killed by falling from a window, to the seat of which he had climbed by means of a table-leg. The other has been described, and I may hereafter give some account of its structure.—BURT G. WILDER.

ORNITHOLOGICAL QUERY. — I have seen a partially albino Robin, in which numerous pure white feathers are scattered through the otherwise normally colored plumage. This is of very common occurrence, but the circumstances under which the specimen was secured open an interesting question. It was one of a flock in which were several partial albinos like itself, and one wholly white bird. Is it probable that, as suggested by Mr. Glover, these speckled birds were the offspring of the white one and a normally colored mate?—ELLIOTT COUES.

BIRDS FOUND BREEDING IN THE CATSKILL MOUNTAINS.—During a visit to the Catskill mountains, in the second week of July, I found the following birds breeding there:— *Regulus satrapa*, *Dendrœca coronata*, *Sitta Canadensis*, *Troglodytes hyemalis*, *Junco hyemalis*, *Dendrœca virens*, *D. Canadensis*. The last four birds are common throughout summer in all the higher hills of Ulster and Sullivan counties, and the mountains of Pennsylvania. The golden-crested wren, I noticed only on the summits of Round Top, and one or two others of the highest peaks. On the eighth of July, I saw several young birds, apparently not many days from the nest. They were attended by their parents, and hid themselves from observation, amid the densest hemlock boughs. At times, the old birds uttered a lisping sort of warble, beginning like that of *Dendrœca striata*, but winding up with a few sprightly notes, similar to those of *D. virens*. The young had no notes, save the usual faint chirp. What is the southernmost observed breeding locality of this bird?

Petrochelidon lunifrons is the commonest swallow in the Catskills, far outnumbering all the other species combined. It breeds in great numbers under the eaves of every barn and deserted house. In no other eastern locality have I noticed it in such great abundance as in these mountains. — T. MARTIN TRIPPE.

FISHES AS SURGEONS.—In walking through the long dank grass of the forest, an almost imperceptible, minute sort of tick attached themselves to the ends of our trousers, and from thence up our legs and buried themselves in the flesh, causing a most annoying sensation of itchiness. The whole party soon became victims to the irritation of this little pest, and scratched and exclaimed without measure. One of the Caribs, on hearing the cause of our vexation, said that the remedy was near, advising us to go without one moment's delay and lie down in the river, and that there was a small fish in the creek which would almost immediately extract the tick if it had not burrowed too far into the flesh; we all did as I fully expect you to do, gentle reader, on hearing this novel style of surgery, burst out into uncontrollable fits of laughter; but on Mr. C— and the manager's assuring us that the blacks only spoke from long experience, and that they themselves had more than once proved the efficacy of the cure,—warning us at the same time that the tick, if not soon extracted, would become a very severe sore; we at last, but without one atom of faith in the experiment, assented to the proposal, and commenced to undress without further opposition.

We bathed, and then in compliance with the Carib's directions, lay down quite still in the shallowest part of the stream. In a few moments, I felt something very sharp strike against several parts of my body; cautiously raising my head, and looking down towards my legs I saw a swarm of very small fish, wriggling and swimming around me, continually bobbing their little heads at my person, and readers, ridiculous, incredulous as I fear my story will sound in the ears of the unlearned, positively the fish not only picked off the tick which were outside the flesh, but actually extracted those which had burrowed beneath the skin.—*Exchange.*

A Sea Bird Inland.—The cold, northeast storm of the past few days brought us a rare visitor in the shape of the Little Auk, *Mergulus alle* L. Two individuals were captured in full winter plumage and plump, though with empty stomachs. Their occurrence thirty miles inland is somewhat remarkable. Allen records the capture of a single specimen at Greenfield, Mass, on the Connecticut, and Linsley places the species among the birds of Connecticut on the strength of one captured near Martha's Vineyard. It is found on the coast of New Hampshire, New York and New Jersey in winter, and was therefore to have been expected on our own, but this is its first appearance in Middletown. — G. Brown Goode, *Middletown*, *Connecticut*, *November* 18*th*.

[The same storm drove a lot of the little auks to Middletown, Mass., and large numbers were taken along the coast of Massachusetts. Maynard says he has seen it in Florida.—Eds.]

Note on Hemirhamphus (Richardi?)—An ichthyological friend requests us to make a note of the unsuspected abundance of this fish on the North Carolina coast. It occurs at certain seasons in immense numbers, swimming near the surface in schools so large and dense that specimens may rapidly be secured by simply jerking a naked hook through the water. — Elliott Coues.

Occurrence of the Orchard Oriole in South Carolina. — Dr. Coues, in his "Synopsis of the Birds of South Carolina," enumerating the Icteridæ, says of the Orchard Oriole (*Icterus spurius*), "*rare*; chiefly migrant; some probably *breed*." My own observations in this State differ somewhat.

On the 28th of June, this last spring, and a few days after my arrival at Camden, I happened to be walking across one of the public squares of the town, when among the songs of many other birds, I thought I distinguished the note of the Orchard Oriole, and the next moment caught sight of the familiar but unexpected person of this little dweller of our northern orchards. Flitting among the branches of a tree near by, every moment or two he sang his cheerful song, and while I stood watching, as he busily searched among the leaves for insects, his more sober partner joined him, holding in her bill a worm, which, however, she soon carried off, flying towards the other corner of the square. I followed, and in a few minutes after discovered the pendant nest, hanging from one of the lower boughs of a small oak and not more than fifteen feet from the ground; drawing the limb down to me, I found that it contained four nearly fledged young. While I was engaged in examining these, the two old birds kept up a terrible chattering, flying so near, that at one time I thought they were about to attack me. One of the young ones I tried to rear in a cage, but failed in my attempt.

Since then, I have discovered five other nests, three of which contained half fledged young, the other two had been but recently deserted, and in one case, I saw the parent birds feeding the fledglings in the neighborhood of the nest.

These nests were all found from the 28th of June to the 19th of July, and were with one exception in the thickly inhabited portions of the town and on the edges of the public squares. I do not doubt but that if I had made especial search for them, I should have discovered many more; for in various parts of the town, I saw the black and chestnut of their plumage shining amidst the topmost boughs and heard their clear and pleasant songs sounding in every direction around me. I counted fifteen pairs of these birds, of which I shot four. They seemed nearly as familiar as I have noticed them at the north, and from all I can learn are thought one of the common species of birds at this place, and are called *Gold-finches*, why, I cannot conceive, as the title would more nearly apply to the Baltimore Oriole. These facts would, I think, prove them not *rare*, at least in this portion of the state, and establish the fact of their *breeding* here.

But, from Dr. Coues not having discovered a nest of this species at Columbia, during two years' observations at that place, which is not more than thirty miles distant, I am inclined to believe that the Orchard Oriole is very partial to certain favored localities, resembling in this respect the Baltimore bird, which most certainly seems to prefer one place to another, although it may be but a few miles distant. Also, during three days spent at a small village, but eleven miles from Camden, I neither saw nor heard one, from the time I left the precincts of the town until my return, although I looked and listened or them especially, and on enquiry found that the residents considered the Gold-finch quite a rare bird in their portion of the country. Audubon speaks of this species as not uncommon in Louisiana during the breeding season.

Of the four male birds I shot, but one possessed the full perfection of plumage of the fourth spring, as mentioned by him, having the deep chestnut color covering the whole lower parts, and the glossy blackness on the head, wings and tail feathers; the others were birds of the second or third years. The nests I found, were *all* formed entirely of grass, coarse without and finer within, like those Audubon speaks of as usually built in Louisiana.

On the 30th of July, I observed a number of these birds, not less than twenty-five or thirty, congregated together on the top of a decayed tree, which stood near the edges of a large cultivated field; at my approach they flew off, and since that time I have neither seen or heard a single individual of this species, and they seem to have entirely disappeared from the place, although the autumn is near at hand.—H. S. KEDNEY.

TULIP TREES DESTROYED BY BARK LICE.—I send you some specimens of Coccidæ belonging to the genus Lecanium, and which I think is an undescribed species.

Mr. P. R. Uhler of Baltimore writes me that it is new to him, and undescribed in the many works which he possesses treating of the Coccidæ. It is very near to the *Lecanium juglandis* Bouché.

I send you some of the deserted scales, also some of the larvæ as they appear at this date. These bark lice are very destructive to the Tulip tree (*Liriodendron tulipifera*). We had some beautiful specimens of these on the college grounds, which have been entirely ruined.

These insects are ovoviviparous. The eggs, which are one-fortieth of an inch in length, appear in July almost filling the female. In August the gravid female contains the embryo in all stages of development, from the undeveloped egg to the active larva. From the last of August to the first of October, the larvæ leave the scale through a central opening in the under surface.

The larvæ are in form and color quite like the common sow-bug, one-twenty-fifth of an inch long, antennæ eight-jointed, abdomen nine-jointed, the posterior joints being deeply sinuate, with a long seta on each side. After wandering about the tree from eight to ten days, they become attached to the bark of the trunk and limbs by little peripheral filaments, two on each segment. The color soon turns from brown to black.

The imago is perfectly formed in June. The turtle-shaped scale being then five-twentieths of an inch long, of a dark flesh color, from which there exudes a sweet fluid which attracts swarms of flies (Diptera), bees and wasps, and falling on the leaves, forms a dark sticky wax. On the underside of the fully formed adult females are four cottony lines extending from the angles to the centre. In October the emptied scales fall from the trees.

The rate of increase is enormous, each female producing thousands of young. Two or three years are sufficient to destroy a large, vigorous tree.—A. J. Cook, *Agricultural College*, *Lansing*, *Mich.*

Instinct or Reason in the Robin?—A pair of Robins (*Turdus migratorius*) had, for three years, built their nests and reared their young on the trees in front of my house. The fourth year they decided for family ends to change the trees for the beams of of a new shed. There they built their nest; and soon four eggs were seen in it; in due time the young appeared. As they were in plain view from our window, and were also exposed to danger from boys, cats, and other enemies, we watched them very closely. After a few days, the birds had grown too large for all to remain in the nest, and one was seen on the beam outside. As cats were whetting their appetites looking at it, I determined to protect it at all hazards, and went near to watch. The parents seemed as fearful and anxious as I, keeping both of them on the wing, going to and from the nest, with much flutter, and noise and talk. I noticed they were bringing, what seemed to be nest material, in addition to the food for the young. The next morning at daylight a new nest close beside the old one, was completed, and two of the young placed in it. Here two in one, and two in the other nest, they were cared for until they could fly. The next year they began their family duties near the same spot, but a fearful gale blew down the shed, with its nest, eggs and birds and they have never nested on the place since.—Rev. S. A. L. Drew, *South Royalton*, *Vt.*

Laboratory for Marine Zoology.—Dr. Anton Dohrn in a letter to Professor Agassiz, who has communicated it for publication in this journal, writes that he has matured a plan which has for many years been in the minds of many zoologists; that of establishing a large laboratory for marine zoology in the Mediterranean. He has obtained permission of the authorities of the city of Naples to construct a large building at his own expense, in the Villa Reale at Naples close to the sea, containing a large aquarium for the public, and extensive rooms for naturalists of every country. Dr. Dohrn, with two or three other German zoologists, will settle there and conduct the administration of both the aquarium and the laboratories. He wishes that information regarding this proposed laboratory be widely extended in America, and earnestly invites all who may go to Naples to visit the aquarium. An annual report of the work done and progress made at the zoological station will be published. A committee has already been formed to give farther dignity and importance to the project, consisting of Messrs. Hemholtz, Dubois-Reymond, Huxley, Darwin, Hæckel, Leuckart, Van Beneden, etc., and in this country Professor Agassiz.

HYBRIDS.—[Simply remarking that we strongly suspected that the supposed hybrid between the cat and raccoon was nothing more than a cross between an Angola and a common gray cat; a variety that is well known in this vicinity and in every way corresponding to the description given; and that we thought it best to let the communication printed in the October number call forth comments on this oft recurring question of hybrids; we accordingly give the following careful summary of the subject with thanks to Dr. Gill for treating it in so concise a manner.—EDS.]

To the Editors of The Naturalist.—I find in the number of "The Naturalist" for October (p. 660) which has just come to hand, a notice by Col. Higginson, endorsed by Prof. Jenks, of an alleged hybrid between a raccoon and cat, which is extremely tantalizing. No information as to the structural characteristics of the animal is given, and scarcely any as to other points, and yet it is not too much to say that the authentication of such hybridity would revolutionize physiology, for certainly nothing like it has hitherto been made known. Remarkable as is the hybridity of the ram and doe roe-buck (*Capreolus Europeus*) recorded by Hellenius, it pales into insignificance when compared with hybridity between the cat and raccoon. We have, in the last mentioned animals, not only representatives of distinct genera and families, but of *primary groups* (Superfamilies) of the fissipede carnivores, characterized by differences of as great morphological value, as, for example, those between the horse and rhinoceros: those differences, in the animals in question, are exhibited especially in the osseous, digestive, and generative systems, and it is therefore desirable to know in what manner these systems are modified in the supposed hybrid; the living animal could readily be examined as to its dentition (the number of the molar teeth and their characteristics), the feet (whether digitigrade or plantigrade and whether tetradactyle or pentadactyle), the head (whether abbreviated and cat-like, reflecting the diminished number of teeth, or whether prolonged into an attenuated muzzle), and especially the character of the snout, whiskers, the claws, the tail and the pelage. The very vague information that has been furnished respecting the form, walk, tail and pelage is very insufficient, and conveys no clear idea as to the animal's peculiarities. No clear idea, either, is obtained by the mere reader from the statement that "the animal when taken up by the tail, turned upon the aggressor with a fury far beyond that of a common cat." Although my experience with cats under such conditions has been limited, I cannot conceive how more fury can be manifested than I have seen exhibited by one cat when subjected to such an interesting experiment. A clue is indeed furnished by the opening paragraph of Col. Higginson's remarks, namely, that the animal "struck [him] at first as being the handsomest *cat* [he] had ever beheld," and after this significant admission, it is more than probable that its characters would only require to be contrasted with those of an ordinary cat. It may be added that the wild cat (*Lynx rufus*) has "pointed and tufted ears" (which the raccoon has not) and hybridity between a domestic cat and lynx would not be improbable.* My acquaintance with you, Messrs. Editors, assures me that you must have entertained considerable doubt respecting the reliability of such an account, although you have made no comments, and you would confer a boon on science if you would procure a *photograph*—not a drawing which might reflect, unintentionally, the imagination of the artist—of the animal in question. Until better evidence than has yet been brought forward is offered, naturalists will not only be excused for doubting any such hybridity, but would be inexcusable for *not* doubting it, and you gentlemen will, I doubt not, concur in this sentiment. I scarcely need remind you of the physical difficulty a male raccoon and

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*It is, of course, not suggested that the animal in question *is* necessarily a hybrid at all, much less between the cat and lynx; the character of the tail alone rendering such origin highly improbable; it is merely intended to indicate *within* what limits hybridity might be credible.

female cat would encounter in the prosecution of their amours, and that therefore if such a monstrous union were possible, the marriage must be between a cat and female raccoon. But until most cogent evidence is adduced, I must remain sceptical as to the possibility of any fruitful union whatever.

Of course, no reflection is cast upon the eminent gentlemen who published the account of the remarkable animal, and who have only repeated what they heard; they, probably not being very familiar with the order of mammals in question, naturally believed in and reflected the opinions of others. My only object in this communication is to elicit more evidence while it may readily be obtained, and I may be allowed to express the hope that when the animal — happily for the interest of science! — dies, it may be reserved for a more worthy fate than to leave its skin stuffed for a museum: it should, of course, be submitted to the examination of a critical anatomist.

In conclusion, a few words respecting the nature of the evidence required in alleged cases of hybridity may be serviceable. In view of the constant statements respecting hybrids circulated in various publications, affirmations and beliefs are not sufficient. Hybrids partake of characters peculiar to each parent, but modified by the sex of each parent. Therefore, all the men of China, Me., might swear they saw a cat and raccoon *in coitu* (and in view of the strength of the sexual instinct, the allegation might not be wholly incredible), and all the men of Taunton might swear that they believed that the offspring of one of the animals was the result of such amours (and in view of the credulity of man and the general ignorance respecting nature, the *reality* of such *belief* would be quite credible!) but all such affirmations and beliefs would not meet the requisites of the case, *unless* the offspring shared characteristics of each parent, and even if it were further sworn that the female had been precluded from intercourse with another animal, it would be no further evidence, for unless the allegation was confirmed by the characteristics of the animal, we would still have infallible nature against truthful and at least fallible man. — THEODORE GILL.

GEOLOGY.

GEOLOGY OF THE PHOSPHATE BEDS OF SOUTH CAROLINA. — Dr.